

# SEQUENCE LISTING

<110> Singletary, George  
Zhou, Lan

<120> Novel Starch Synthase Polynucleotides  
and Their Use in the Production of New Starches

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<151> 1999-09-02

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Leu	Met	Pro	Ser	Arg	Phe	Glu	Pro	Cys	Gly	Leu	Asn	Gln	Leu	His	Ala	
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Met	Met	Tyr	Gly	Thr	Ile	Pro	Val	Val	His	Ala	Val	Gly	Gly	Leu	Arg	
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Thr	Phe	Asp	Arg	Ala	Glu	Ala	His	Arg	Met	Ile	Val	Ala	Leu	Gly	His	
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Cys	Leu	Asn	Thr	Tyr	Arg	Asn	Tyr	Lys	Glu	Ser	Trp	Val	Gly	Leu	Gln	
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Lys	Arg	Gly	Met	Met	Gln	Asp	Leu	Ser	Trp	Glu	Ser	Ala	Ala	Glu	His	
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Asn	Gln	Asp	Val	Asp	Ile	Ala	Asp	Asp	Ser	Val	Ala	Gln	Thr	Met	Glu	
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Gln Tyr Asp Leu Val Pro Asp Leu Arg Val Leu Asp Val Ala Val Glu	
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Ser Tyr Phe Asp Gly Gln Leu Phe Lys Asn Lys Ile Trp Val Ala Ala	
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Thr Phe Leu Thr Thr Asp Glu Gln Gly Leu Ser Ser Ala Met Glu Arg			
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Ala Phe Arg Tyr Tyr Thr Lys Ser Pro Lys Asn Trp Gln Asn Leu Val			
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 Met Ala Ala Met Thr Ala Ser His Phe Ile Ser  
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aat agt tca tgc tcc atc ttc aat gga gct ttt gat tct gtg gtg acg 161  
 Asn Ser Ser Cys Ser Ile Phe Asn Gly Ala Phe Asp Ser Val Val Thr  
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tct ttc caa agc aga agg att cca ttc tcc agc aac cac act aat aat 209  
 Ser Phe Gln Ser Arg Arg Ile Pro Phe Ser Ser Asn His Thr Asn Asn  
 30 35 40

tat gaa ggg ctg aga act cgg aat gtg gtg gat tca cgt aaa acg cgg 257  
 Tyr Glu Gly Leu Arg Thr Arg Asn Val Val Asp Ser Arg Lys Thr Arg  
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atg act gcg aag gca act tct agg cta gct agg agg gtt act cga cat 305  
 Met Thr Ala Lys Ala Thr Ser Arg Leu Ala Arg Arg Val Thr Arg His



60	65	70	75	
gcc agc caa aga ccc ttg att gtt gct gtc tgt gga act gga atg aac				353
Ala Ser Gln Arg Pro Leu Ile Val Ala Val Cys Gly Thr Gly Met Asn	80	85	90	
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Leu Val Phe Val Gly Cys Glu Val Ala Pro Trp Ser Lys Thr Gly Gly	95	100	105	
ctt ggc gat gtt ctt aga gga ttg cca cct gct atg gct gca att ggg				449
Leu Gly Asp Val Leu Arg Gly Leu Pro Pro Ala Met Ala Ala Ile Gly	110	115	120	
cac agg gtc atg acc gtg gtg cca cga tat gac caa tat aaa gat atc				497
His Arg Val Met Thr Val Val Pro Arg Tyr Asp Gln Tyr Lys Asp Ile	125	130	135	
tgg gat aca agt gtc cca gtt gag tta aaa gtt ggg gat aag att gaa				545
Trp Asp Thr Ser Val Pro Val Glu Leu Lys Val Gly Asp Lys Ile Glu	140	145	150	155
act gtc cgc ttc ttc cac tgc tac aaa agg gga gtt gat cgg gtt ttt				593
Thr Val Arg Phe Phe His Cys Tyr Lys Arg Gly Val Asp Arg Val Phe	160	165	170	
gtg gat cac cct atg ttt ctc gag aag gtt tgg ggg aaa aca gga gga				641
Val Asp His Pro Met Phe Leu Glu Lys Val Trp Gly Lys Thr Gly Gly	175	180	185	
aaa tta tat ggt cct gtt aca gga aca gat tat gca gac aat caa cta				689
Lys Leu Tyr Gly Pro Val Thr Gly Thr Asp Tyr Ala Asp Asn Gln Leu	190	195	200	
aga ttc agc ctt ttg tgc ctg gca gct ctg gaa gct cca aga ctt cta				737
Arg Phe Ser Leu Leu Cys Leu Ala Ala Leu Glu Ala Pro Arg Leu Leu	205	210	215	
aat ctc aac aac agc aaa tac tat tct gga cca tat gga gat gat gtt				785
Asn Leu Asn Asn Ser Lys Tyr Tyr Ser Gly Pro Tyr Gly Asp Asp Val	220	225	230	235
gtg ttt att gcc aac gat tgg cat tct gct cta ctg ccc tgc tac ttg				833
Val Phe Ile Ala Asn Asp Trp His Ser Ala Leu Leu Pro Cys Tyr Leu	240	245	250	
aaa act atg tac caa tca cat ggt att tac atg aat gct aag gtt gca				881
Lys Thr Met Tyr Gln Ser His Gly Ile Tyr Met Asn Ala Lys Val Ala	255	260	265	
ttt tgc att cat aat att gct tac cag ggc cga ttt gcc ttt tgc gac				929
Phe Cys Ile His Asn Ile Ala Tyr Gln Gly Arg Phe Ala Phe Ser Asp	270	275	280	
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Phe Glu Leu Leu Asn Leu Pro Asn Lys Phe Lys Ser Ser Phe Asp Phe				

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Met Asp Gly Tyr Asp	Lys Pro Val Lys Gly	Arg Lys Ile Asn Trp Met	
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aag gct gga ata ata	gaa tgt gat agg tgc	ttg acc gtg agc cca tat	1073
Lys Ala Gly Ile Ile	Glu Cys Asp Arg Cys	Leu Thr Val Ser Pro Tyr	
	320	325 330	
tat gcc caa gag ctt gtc	tca ggg gta gag aag	ggg gtt gag ttg ggc	1121
Tyr Ala Gln Glu Leu	Val Ser Gly Val Glu	Lys Gly Val Glu Leu Gly	
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Asn Ile Leu Arg Met	Lys Thr Ile Cys Gly	Ile Val Asn Gly Met Asp	
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acc acg gag tgg aat	cca tta aca gac aaa	tat att tct aca aac tac	1217
Thr Thr Glu Trp Asn	Pro Leu Thr Asp Lys	Tyr Ile Ser Thr Asn Tyr	
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Asp Ala Thr Thr Val	Leu Asp Ala Lys Pro	Leu Cys Lys Glu Ala Leu	
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caa gct gag tgt ggg	ctg cct gtt aac aaa	aac aag ctt gtt ttg gcc	1313
Gln Ala Glu Cys Gly	Leu Pro Val Asn Lys	Asn Lys Leu Val Leu Ala	
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Phe Val Gly Arg Leu	Asp Glu Gln Lys Gly	Ser Asp Ile Leu Ala Ala	
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gca att cca gaa ctt	ctt tgt gag aat gtt	caa gtg ata gta ctt ggc	1409
Ala Ile Pro Glu Leu	Leu Cys Glu Asn Val	Gln Val Ile Val Leu Gly	
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act ggc aag aag aag	ttg gag agt gaa ctt	aca tta ctt gag gaa atg	1457
Thr Gly Lys Lys Lys	Leu Glu Ser Glu Leu	Thr Leu Leu Glu Glu Met	
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Phe Pro Asp Lys Phe	Arg Ala His Leu Lys	Phe Asn Val Pro Leu Ala	
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cat gca atc atg gca	gga gct gat atc ctt	gtt att cca agc aga ttc	1553
His Ala Ile Met Ala	Gly Ala Asp Ile Leu	Val Ile Pro Ser Arg Phe	
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gaa ccc tgt ggc ctc	att cag ctt cag gcc	atg cga tat gga act ctc	1601
Glu Pro Cys Gly Leu	Ile Gln Leu Gln Ala	Met Arg Tyr Gly Thr Leu	
	495	500 505	
cct atg tgt agc acc	act ggt gga ctt gtt	gac act gtc aaa gaa ggc	1649
Pro Met Cys Ser Thr	Thr Gly Gly Leu Val	Asp Thr Val Lys Glu Gly	

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Phe Thr Gly Phe His Met Gly Pro Phe Ser Val Glu Cys Asp Ala Val			
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gac aaa gct gat gta caa aag att gtc gaa acc acg aaa agg gcc ctc			1745
Asp Lys Ala Asp Val Gln Lys Ile Val Glu Thr Thr Lys Arg Ala Leu			
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aaa gtc tat gga aca cct gct ttt gtg gag atg atc aag aac tgc atg			1793
Lys Val Tyr Gly Thr Pro Ala Phe Val Glu Met Ile Lys Asn Cys Met			
	560	565	570
aac caa gat ctc tca tgg aag gga cct gca aag aag tgg gaa caa ttt			1841
Asn Gln Asp Leu Ser Trp Lys Gly Pro Ala Lys Lys Trp Glu Gln Phe			
	575	580	585
ctc ctg agc atg ggg gct gct ggc agt gaa cct gga att gat ggg gag			1889
Leu Leu Ser Met Gly Ala Ala Gly Ser Glu Pro Gly Ile Asp Gly Glu			
	590	595	600
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Glu Ile Ala Pro Leu Ala Lys Glu Asn Val Ala Thr Pro			
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Arg	Ile	Pro	Phe	Ser	Ser	Asn	His	Thr	Asn	Asn	Tyr	Glu	Gly	Leu	Arg
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Thr	Arg	Asn	Val	Val	Asp	Ser	Arg	Lys	Thr	Arg	Met	Thr	Ala	Lys	Ala
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Thr	Ser	Arg	Leu	Ala	Arg	Arg	Val	Thr	Arg	His	Ala	Ser	Gln	Arg	Pro
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Cys	Glu	Val	Ala	Pro	Trp	Ser	Lys	Thr	Gly	Gly	Leu	Gly	Asp	Val	Leu
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Arg	Gly	Leu	Pro	Pro	Ala	Met	Ala	Ala	Ile	Gly	His	Arg	Val	Met	Thr
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His	Cys	Tyr	Lys	Arg	Gly	Val	Asp	Arg	Val	Phe	Val	Asp	His	Pro Met
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Phe	Leu	Glu	Lys	Val	Trp	Gly	Lys	Thr	Gly	Gly	Lys	Leu	Tyr	Gly Pro
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Val	Thr	Gly	Thr	Asp	Tyr	Ala	Asp	Asn	Gln	Leu	Arg	Phe	Ser	Leu Leu
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Cys	Leu	Ala	Ala	Leu	Glu	Ala	Pro	Arg	Leu	Leu	Asn	Leu	Asn	Asn Ser
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Lys	Tyr	Tyr	Ser	Gly	Pro	Tyr	Gly	Asp	Asp	Val	Val	Phe	Ile	Ala Asn
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Asp	Trp	His	Ser	Ala	Leu	Leu	Pro	Cys	Tyr	Leu	Lys	Thr	Met	Tyr Gln
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Ser	His	Gly	Ile	Tyr	Met	Asn	Ala	Lys	Val	Ala	Phe	Cys	Ile	His Asn
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Ile	Ala	Tyr	Gln	Gly	Arg	Phe	Ala	Phe	Ser	Asp	Phe	Glu	Leu	Leu Asn
	275						280					285		
Leu	Pro	Asn	Lys	Phe	Lys	Ser	Ser	Phe	Asp	Phe	Met	Asp	Gly	Tyr Asp
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Lys	Pro	Val	Lys	Gly	Arg	Lys	Ile	Asn	Trp	Met	Lys	Ala	Gly	Ile Ile
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Glu	Cys	Asp	Arg	Cys	Leu	Thr	Val	Ser	Pro	Tyr	Tyr	Ala	Gln	Glu Leu
				325					330					335
Val	Ser	Gly	Val	Glu	Lys	Gly	Val	Glu	Leu	Gly	Asn	Ile	Leu	Arg Met
		340						345					350	
Lys	Thr	Ile	Cys	Gly	Ile	Val	Asn	Gly	Met	Asp	Thr	Thr	Glu	Trp Asn
	355						360					365		
Pro	Leu	Thr	Asp	Lys	Tyr	Ile	Ser	Thr	Asn	Tyr	Asp	Ala	Thr	Thr Val
	370					375					380			
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Leu	Pro	Val	Asn	Lys	Asn	Lys	Leu	Val	Leu	Ala	Phe	Val	Gly	Arg Leu
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Asp	Glu	Gln	Lys	Gly	Ser	Asp	Ile	Leu	Ala	Ala	Ala	Ile	Pro	Glu Leu
		420					425						430	
Leu	Cys	Glu	Asn	Val	Gln	Val	Ile	Val	Leu	Gly	Thr	Gly	Lys	Lys Lys
	435					440						445		
Leu	Glu	Ser	Glu	Leu	Thr	Leu	Leu	Glu	Glu	Met	Phe	Pro	Asp	Lys Phe
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Arg	Ala	His	Leu	Lys	Phe	Asn	Val	Pro	Leu	Ala	His	Ala	Ile	Met Ala
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Gly	Ala	Asp	Ile	Leu	Val	Ile	Pro	Ser	Arg	Phe	Glu	Pro	Cys	Gly Leu
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Ile	Gln	Leu	Gln	Ala	Met	Arg	Tyr	Gly	Thr	Leu	Pro	Met	Cys	Ser Thr
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	530					535					540			
Gln	Lys	Ile	Val	Glu	Thr	Lys	Arg	Ala	Leu	Lys	Val	Tyr	Gly	Thr
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Pro	Ala	Phe	Val	Glu	Met	Ile	Lys	Asn	Cys	Met	Asn	Gln	Asp	Leu Ser
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Ala	Ala	Gly	Ser	Glu	Pro	Gly	Ile	Asp	Gly	Glu	Glu	Ile	Ala	Pro Leu



Val	Ile	Cys	Gly	Lys	Gly	Met	Asn	Leu	Val	Phe	Val	Gly	Ala	Glu	Met		
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Ala	Pro	Trp	Ser	Lys	Thr	Gly	Gly	Leu	Gly	Asp	Val	Leu	Gly	Gly	Leu		
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cca	ccg	gca	ttg	gcg	gca	aat	gga	cat	cga	ggt	atg	ggt	ata	gcg	cca	501	
Pro	Pro	Ala	Leu	Ala	Ala	Asn	Gly	His	Arg	Val	Met	Val	Ile	Ala	Pro		
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cgt	tat	gat	caa	tac	atg	gat	gct	tgg	gat	aca	gat	gct	ctt	ggt	gag	549	
Arg	Tyr	Asp	Gln	Tyr	Met	Asp	Ala	Trp	Asp	Thr	Asp	Ala	Leu	Val	Glu		
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ttg	aaa	ggt	ggg	gat	agg	tgt	gaa	acc	gtg	cgc	ttc	ttt	cac	tgc	tat	597	
Leu	Lys	Val	Gly	Asp	Arg	Cys	Glu	Thr	Val	Arg	Phe	Phe	His	Cys	Tyr		
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aaa	aga	gga	ggt	gat	cga	ggt	ttt	gtc	gat	cac	cct	atg	ttt	ctt	gcg	645	
Lys	Arg	Gly	Val	Asp	Arg	Val	Phe	Val	Asp	His	Pro	Met	Phe	Leu	Ala		
			165					170					175				
aag	gtc	tgg	ggg	aaa	act	ggt	ggg	aag	att	tat	ggt	cct	aac	act	gga	693	
Lys	Val	Trp	Gly	Lys	Thr	Gly	Gly	Lys	Ile	Tyr	Gly	Pro	Asn	Thr	Gly		
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aca	gac	tat	cag	gac	aat	cag	cta	cgc	ttc	agc	ttt	cta	tgc	cag	gca	741	
Thr	Asp	Tyr	Gln	Asp	Asn	Gln	Leu	Arg	Phe	Ser	Phe	Leu	Cys	Gln	Ala		
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Ile	Tyr	Lys	Asn	Ala	Lys	Val	Ala	Phe	Cys	Ile	His	Asn	Ile	Ser	Tyr		
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caa	ggt	cga	ttt	tct	ccc	tca	gac	ttc	gaa	ttt	ctc	aac	ctt	ccg	gag	981	
Gln	Gly	Arg	Phe	Ser	Pro	Ser	Asp	Phe	Glu	Phe	Leu	Asn	Leu	Pro	Glu		
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cag ctt gag agt atg gag gaa atg ttc ccg gac aag gtg agg gca gtt	1509
Gln Leu Glu Ser Met Glu Glu Met Phe Pro Asp Lys Val Arg Ala Val	
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Ile Ile Val Ile Pro Ser Arg Phe Glu Pro Cys Gly Leu Ile Gln Leu	
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Gln Gly Met Gln Tyr Gly Thr Pro Ser Ala Cys Ser Ser Thr Gly Gly	
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Leu Val Asp Thr Val Lys Glu Gly Lys Thr Gly Phe His Met Gly Pro	
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Asn	Val	Ala	Thr	Pro													
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<212> PRT

<213> Typha latifolia

<400> 18

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Ser	Val	Asp	Leu	Leu	Gln	Val	Arg	Thr	Lys	Ala	Lys	Thr	Thr	Ser	Lys		
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Gln	Phe	Lys	Asn	Gly	Cys	Ser	Thr	Val	Asn	Leu	Arg	Pro	Pro	Arg	Ala		
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Pro	Arg	Tyr	Asp	Gln	Tyr	Met	Asp	Ala	Trp	Asp	Thr	Asp	Ala	Leu	Val		
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Glu	Leu	Lys	Val	Gly	Asp	Arg	Cys	Glu	Thr	Val	Arg	Phe	Phe	His	Cys		
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Gly	Thr	Asp	Tyr	Gln	Asp	Asn	Gln	Leu	Arg	Phe	Ser	Phe	Leu	Cys	Gln		
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Phe	Ser	Gly	Pro	Tyr	Gly	Glu	Asp	Val	Ile	Phe	Ile	Cys	Asn	Asp	Trp		
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His	Thr	Ser	Leu	Leu	Pro	Cys	Tyr	Leu	Lys	Ser	Met	Tyr	His	Pro	Arg		
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Pro	Phe	Ser	Ala	Glu	Cys	Glu	Val	Val	Asp	Leu	Ser	Asp	Val	Lys	Lys		
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Val	Val	Thr	Thr	Val	Lys	Arg	Ala	Leu	Lys	Val	Ile	Gly	Thr	Pro	Ala		
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Phe	Glu	Asp	Met	Ile	Lys	Asn	Cys	Met	Ala	Gln	Asp	Leu	Ser	Trp	Lys		
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 Arg Leu Asn Thr Lys Ser Thr Pro Lys Val Gly Ser Ser Val Val Ala  
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 Pro Thr Val Glu Thr Thr Gly Met Asn Leu Val Phe Val Gly Thr Glu  
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 Thr Gly Pro Tyr Ser Lys Thr Gly Gly Leu Gly Asp Val Leu Gly Gly  
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Leu Pro Pro Ala Leu Ala Ala Arg Gly His Arg Val Met Val Val Thr	
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Pro Arg Tyr Asp Gln Tyr Lys Asp Ala Trp Asp Thr Asn Thr Val Leu	
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Phe Ser Gly Pro Tyr Gly Glu Asp Val Val Phe Ile Ala Asn Asp Trp	
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His Thr Gly Pro Leu Pro Cys Tyr Leu Lys Ser Val Tyr Lys Ser Glu	
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Tyr Gln Gly Arg Phe Ala Phe Pro Asp Phe Ser Leu Leu Asn Leu Pro	
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Val Lys Gly Arg Lys Ile Asn Trp Met Lys Ala Gly Ile Leu Glu Ala	
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Gln Lys Gly Ser Asp Ile Leu Ala Ala Ala Ile Pro Glu Leu Met Asp	
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Leu Glu Gly Met Lys Tyr Gly Met Pro Ala Ile Cys Ser Thr Thr Gly	
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Glu Pro Ala Lys Lys Trp Glu Glu Leu Leu Leu Gly Leu Glu Val Asp	
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Gly Ser Glu Pro Gly Phe Asp Gly Glu Glu Ile Ala Pro Leu Ala Lys	
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Glu Asn Val Ala Ala Pro Phe	
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	50					55					60				
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Glu	Thr	Gly	Pro	Tyr	Ser	Lys	Thr	Gly	Gly	Leu	Gly	Asp	Val	Leu	Gly
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Gly	Leu	Pro	Pro	Ala	Leu	Ala	Ala	Arg	Gly	His	Arg	Val	Met	Val	Val
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Thr	Pro	Arg	Tyr	Asp	Gln	Tyr	Lys	Asp	Ala	Trp	Asp	Thr	Asn	Thr	Val
		115					120					125			
Leu	Glu	Ile	Lys	Val	Gly	Asp	Lys	Met	Glu	Thr	Val	Arg	Phe	Phe	His
		130				135					140				
Leu	His	Lys	Arg	Gly	Val	Asp	Arg	Val	Phe	Ile	Asp	His	Pro	Trp	Phe
145					150					155					160
Leu	Glu	Lys	Val	Trp	Gly	Lys	Thr	Gly	Gly	Lys	Leu	Tyr	Gly	Pro	Val
			165						170					175	
Thr	Gly	Thr	Asp	Tyr	Asp	Asp	Asn	Gln	Leu	Arg	Phe	Ser	Leu	Leu	Cys
			180				185						190		
Gln	Ala	Ala	Leu	Glu	Ala	Pro	Arg	Val	Leu	Asn	Leu	Asn	Asn	Ser	Lys
		195					200					205			
Tyr	Phe	Ser	Gly	Pro	Tyr	Gly	Glu	Asp	Val	Val	Phe	Ile	Ala	Asn	Asp
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35 40 45

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Asn Leu Leu Gln Gln Ile Ala Lys Arg Lys Asn Ile Val Ser Ser Ile
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aga agt gac gta act aag gaa gaa aat gat tca agt tct tat gtt gag 288
Arg Ser Asp Val Thr Lys Glu Glu Asn Asp Ser Ser Ser Tyr Val Glu
85 90 95

aag gaa aat ttg gag cca agc agt gga gag caa aat ggg aag tac aaa 336
Lys Glu Asn Leu Glu Pro Ser Ser Gly Glu Gln Asn Gly Lys Tyr Lys
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Ser Gly Ala Val Pro Asn Asn Tyr Ser Gln Leu Ala Gln Asp Asp Thr
115 120 125

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Ser Glu Asn Pro Leu Val Asn Ser Phe Gly Gly Ser Pro Lys Asp Asn
130 135 140

gta gaa gct gtt gaa ttt cag gtg aga caa tca gca gta gat gct ttt 480
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145 150 155 160

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Phe Tyr Leu Glu Ala Glu Ser Asp Gly Ala Lys Glu Glu Asn Ala Glu	
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Asp Leu Val Glu Ala Lys Leu Asp Ser Val His Val Lys Asp Asp Leu	
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Asn Pro Gly Glu Glu Asn Glu Val Pro Leu Pro Leu Ala Gly Ala Asn	
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Thr Gly Gly Leu Gly Asp Val Ala Gly Ala Leu Pro Lys Ala Leu Ala	
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Gln Asp Met Glu Val Thr Tyr Phe His Ala Tyr Ile Asp Gly Val Asp	
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Lys Ala Ala Val Glu Val Pro Trp His Val Pro Cys Gly Gly Phe Cys	
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Arg Gly Pro Val Asp Asp Phe Lys Phe Val Gly Leu Pro Asp His Tyr	
405 410 415	
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Leu Asp Leu Phe Arg Leu Tyr Asp Pro Val Gly Gly Glu His Leu Asn	
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Arg Asp Thr Val Thr Gln Phe Asp Pro Phe Asn Glu Ser Gly Leu Gly	
645 650 655	
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Trp Thr Phe Asp Arg Ala Glu Ala Gly Lys Leu Ile His Ala Leu Asn	
660 665 670	
aac tgc ttg aat aca tac tgg aat tac aag gac agt tgg aag ggt ctt	2064
Asn Cys Leu Asn Thr Tyr Trp Asn Tyr Lys Asp Ser Trp Lys Gly Leu	
675 680 685	
caa aca aga ggg atg atg caa gat ctt agc tgg gat aat gct gct cag	2112
Gln Thr Arg Gly Met Met Gln Asp Leu Ser Trp Asp Asn Ala Ala Gln	
690 695 700	
caa tac gag gat gtc ctt gtt gca gcc aag tac caa tgg tga ttc ttc	2160
Gln Tyr Glu Asp Val Leu Val Ala Ala Lys Tyr Gln Trp * Phe Phe	
705 710 715	
tcc atc aca tgt gtg tta att gag atc tat cga gag atg atg ata atg	2208
Ser Ile Thr Cys Val Leu Ile Glu Ile Tyr Arg Glu Met Met Ile Met	
720 725 730 735	
gtc tat atg tga gat cat agt ttc aga tat gcg gca gca tgc aaa tag	2256
Val Tyr Met * Asp His Ser Phe Arg Tyr Ala Ala Ala Cys Lys *	
740 745	
atg aaa ttt ttt tgg ctc atg ctg gaa cat gta aat tgt ttc tct ttt	2304
Met Lys Phe Phe Trp Leu Met Leu Glu His Val Asn Cys Phe Ser Phe	
750 755 760 765	
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Phe Pro Phe Leu Pro Cys Thr Leu Tyr Arg Gly Arg Arg Lys Gln Leu	
770 775 780	
ctg aaa act gtg gag gtc tgt gta ccc tat att tct agc ttt tat taa	2400
Leu Lys Thr Val Glu Val Cys Val Pro Tyr Ile Ser Ser Phe Tyr *	
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Cys Lys * Phe Phe Val	
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<212> PRT

<213> *Typha latifolia*

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Ser	Gly	Ala	Val	Pro	Asn	Asn	Tyr	Ser	Gln	Leu	Ala	Gln	Asp	Asp	Thr	
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Tyr	Glu	Gly	Asn	Arg	Val	Asp	Ile	Leu	Lys	Arg	Met	Ile	Leu	Phe	Cys	
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